Trade and Environment Dimensions in the Food and Food Processing Industries in Asia and the Pacific

Improving the Environmental Sustainability and the Export Competitiveness in the Food Sector: Case of the Malaysian palm oil industry

Prepared by Christie F. Robert and Sathianathan Menon qa plus asia-pacific sdn. bhd.

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CHAPTER 1

I. Introduction

Brief Background of Study

The rapid globalization and dismantling of trade barriers is resulting in many changes in today’s international trade environment. A notable example of these changes relate to the Food and Agricultural sectors concerning Quality, Food Safety, Environmental, Social, Regulatory and Marketing requirements.

Agriculture has significantly evolved over the last decade and through intensification has definitively lost its image as a natural and harmless activity. The agro-food sector in particular is coming under increasing scrutiny by consumers and environmentalist organizations. Growing discontent with conventional, industrialised agriculture is not only putting pressure on agribusiness but creating and driving opportunities for sustainable business strategies and opening up market niches for environmentally-friendly practices and safe produce.

The future of crop agriculture and food processing is becoming more complex. Consumers have become increasingly sophisticated and are demanding higher quality products that respond to changing lifestyles and growing concern about personal health, food safety, and the environment. Many challenges face agro-food producers that seek to remain competitive in both local and international markets.

Food safety and environmental requirements are becoming more stringent as a result of the increased knowledge of the risk and harm to health and environment. Recent outbreaks of mad cow disease (BSE), foot and mouth disease, avian influenza and other food scares such as GMOs, pesticide residues and chemical food additives have raised food safety concerns. In addition, the excessive use of chemicals as fertilisers and pesticides, raise the risk of pollution of the environment and contamination of drinking water and the products we eat, are other concerns. Food producers are being criticized for promoting monocultures that lead to higher use of agro-chemicals, an increase in soil erosion, loss of agro-biodiversity and high energy use.

These requirements have very important implications for trade, in particular for market access and development. The global business for edible oils and fats must come to terms with the many challenges and tribulations and examine what is needed to tackle these issues fully and in an effective manner so as to remain competitive.

Palm oil is one of the world’s most popular vegetable oils. A key aspect of the edible oil market is that these oils are easily substitutable for a given end-use. Palm oil has to compete with 16 other oils and fats for its market share. The total global production of the 8 major vegetable oils in 2005 was about 109 million tonnes. Table I shows the share of these 8 oils in world production. International trade in world’s oil and fat exports in 2005 was about 50.0
million tonnes with palm oil forming 53% of the total. Refer Table II. More than 80% of the world’s palm oil exports originate from the oil palm plantations of Malaysia, Indonesia and Nigeria.

Table I: % Share in world production of 8 major oils

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Coconut oil</td>
<td>4.80 %</td>
<td>2.92 %</td>
</tr>
<tr>
<td>Palm kernel oil</td>
<td>2.50 %</td>
<td>3.43 %</td>
</tr>
<tr>
<td>Groundnut oil</td>
<td>6.40 %</td>
<td>4.12 %</td>
</tr>
<tr>
<td>Cotton oil</td>
<td>7.50 %</td>
<td>4.80 %</td>
</tr>
<tr>
<td>Sunflower oil</td>
<td>13.90 %</td>
<td>8.80 %</td>
</tr>
<tr>
<td>Rapeseed oil</td>
<td>16.10 %</td>
<td>14.58 %</td>
</tr>
<tr>
<td>Palm oil</td>
<td>20.10 %</td>
<td>30.70 %</td>
</tr>
<tr>
<td>Soybean oil</td>
<td>28.60 %</td>
<td>30.65 %</td>
</tr>
</tbody>
</table>

Source: Oil World

Table II: World Oil and Fats Export Year 2005 (Total Exports: 50 million tonnes)

<table>
<thead>
<tr>
<th>Oils</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palm oil</td>
<td>53</td>
</tr>
<tr>
<td>Soybean oil</td>
<td>19</td>
</tr>
<tr>
<td>Lauric oils</td>
<td>8</td>
</tr>
<tr>
<td>Sunflower seed oil</td>
<td>6</td>
</tr>
<tr>
<td>Rapeseed oil</td>
<td>3</td>
</tr>
<tr>
<td>Animal fats</td>
<td>7</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Malaysian Palm Oil Council (MPOC)

Palm oil is expected to be the major oil to meet the world’s future need. This is due to the competitiveness of palm oil which arises from the high yield of oil per hectare as compared to other oilseed crops. Table III refers.

Table III: Comparison of oil yield per hectare of 4 major oilseeds

<table>
<thead>
<tr>
<th>Oilseeds</th>
<th>Oil Yield (tonne/ha/annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palm oil (Malaysian)</td>
<td>3.46</td>
</tr>
<tr>
<td>Rapeseed (EU)</td>
<td>1.33</td>
</tr>
<tr>
<td>Soybean (USA)</td>
<td>0.46</td>
</tr>
<tr>
<td>Sunflower (Argentina)</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Although palm oil now dominates the international edible oil trade, the commodity is not without its share of threat and challenges from competing oils. Presently, the industry is confronting new challenges of differing nature and dimensions in terms of regulatory requirements, trade obligations, technological advancement and new industrial and consumer demands. These demands are manifested in different forms such as product quality, nutritional aspects, food safety, environmental concerns, worker welfare and sustainable production.

Over the past few years, globally, the oil palm industry has been increasingly pressured from stakeholders, namely environmentalists, who have created a powerful lobby against oil palm, claiming that the crop contributes to rainforest destruction with its attendant elimination of wildlife and biodiversity and the alienation of indigenous people from their land. Other concerns are on agronomic practices that are polluting the environment, excessive and unsafe use of pesticides, poor attention to worker health and safety and others. One major challenge in the palm oil business is environment sustainability issues which is of global concern and is fast turning into a key trade issue.

If palm oil is to stay dominant in the global trade, it is imperative that producers and exporters to develop appropriate production and marketing strategies not only to address these concerns but also to enhance the acceptance of palm oil among consumers worldwide.

The palm oil industry in Malaysia is the leading agricultural sector in the country and plays a prominent role in the world oils and fat trade. From a mere few hundred acres of commercial palms in 1917, the Malaysian palm oil trade has grown to 4.0 million hectares in 2005, producing a total of 18.62 million tonnes of palm products. Malaysia is the leading producer of palm oil in the world, with Indonesia a close second and rapidly expanding. Environmental sustainability issues must be integrated into the palm oil business strategy.

Despite the rapid expansion, promoted by its profitability, the oil palm industry in Malaysia is facing increasing constraints in terms of rising production costs, stagnating yields, shortage of labour, enhanced competition from Indonesia and massively subsidized production of competing oils in United States and Europe. These problems are mitigated only by its advanced infrastructural development and established as the world’s leading producer and exporter of quality palm oil products and the rising world demand for oils and fats.

**Rationale of the study**

The rationale of this study is to examine the present scenario of the Malaysian palm oil industry, the relevant trends in global trade in the palm oil sector, and the multi-dimensionality in environmental and health requirements that could have a potential impact on market access and export competitiveness of palm oil and palm oil products in the food sector. The study will also look into the varied initiatives being undertaken by the stakeholders in the palm oil supply chain, particularly the plantation sector, in addressing the
issues relating to environment and health, in order to remain a global competitive player in palm oil trade.

The scope of this study will be confined to the Malaysian palm oil industry and will address issues covering activities in the palm oil supply chain, extending from the cultivation of oil palm to export of palm oil and palm products to overseas countries.

The paper was researched and written using the following sources of information:
- a desk review of literature and data on the Malaysian palm oil industry and existing initiatives on sustainable agriculture
- consultation and interviews with industry members, private plantation companies and individuals who have working experience in the sector

Overview of the Chapters

The paper is divided into the following chapters

**Chapter 2** provides an overview of the Malaysian palm oil industry and includes a brief historic review of the industry in the country, information on the oil palm fruit and its processing, the refining industry and also information/data on production and export figures. The chapter also reviews the issues and challenges within the palm oil supply chain in Malaysia, particularly with regards to food safety, traceability, environmental and health which are entry barriers for market access, particularly to the developed nations like the EU and US. The chapter also identifies and examines the domestic environmental impacts of palm oil production in Malaysia in regard to the cultivation practices in the plantations and the processing of the harvested produce in the palm oil mills. It also looks at issues in refining, storage and transportation of the final produce.

**Chapter 3** examines the various initiatives that are in place within the palm oil industry to address the environmental and health requirements, the government policies and support and the pro-active efforts undertaken by private plantation companies and the industry at large to address the issues and enable market access for palm oil and its products.

**Chapter 4** summarises recommendations in connection to the issues addressed above. The recommendations would identify the possible role of the government and institutions in assisting the industry players in conforming to environmental and health requirements, role of private organizations and SMEs, regional cooperation among palm oil producing countries and the possible assistance from UNESCAP and similar organizations in this task.
CHAPTER 2

Trade and Environment linkages in the palm oil industry in Malaysia

A) Brief Overview of the palm oil industry in Malaysia

i) Malaysian Agriculture sector

Agriculture has played a vital role in the development of modern Malaysia and continues to make a significant contribution to the national economy. The agriculture sector encompasses activities in the following three major commodity groups:

a) Industrial commodities – rubber, crude palm oil, palm kernel oil, sawn logs and cocoa
b) Food commodities – paddy, fish including marine fish and aquaculture and livestock including beef, mutton, pork, poultry, eggs and milk
c) Miscellaneous commodities – pepper, pineapple, tobacco, flowers, fruits, vegetables, tea, sugarcane and coconut.

The commodity sector continues to prove itself to be a dynamic, sustainable and home grown sector that features prominently in Malaysia’s economic growth, in terms of contribution to the Gross Domestic Products (GDP), employment and export earnings, as well as providing higher living standards for the rural population.

The sector promises a lot of opportunities, and has evolved from merely producing and exporting raw materials to producing semi-processed and finish products thus generating more value-added products to meet the growing world demand.

The plantation crops occupy the major portion of the agricultural planted land area in the country. The oil palm sector occupies the largest land area, and Malaysia still leads the world in terms of vegetable oil production and research and development. Table IV illustrates the planted areas of selected crops in Malaysia.

Table IV: PLANTED AREAS OF SELECTED CROPS (‘000 hectares)

<table>
<thead>
<tr>
<th>CROPS</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUBBER</td>
<td>1,660</td>
<td>1,564</td>
<td>1,545</td>
<td>1,570</td>
<td>1,560</td>
</tr>
<tr>
<td>OIL PALM</td>
<td>3,431</td>
<td>3,633</td>
<td>3,714</td>
<td>3,593</td>
<td>3,875</td>
</tr>
<tr>
<td>COCONUT</td>
<td>159</td>
<td>151</td>
<td>139</td>
<td>150</td>
<td>147</td>
</tr>
<tr>
<td>COCOA</td>
<td>76</td>
<td>58</td>
<td>42</td>
<td>59</td>
<td>53</td>
</tr>
<tr>
<td>PADDY</td>
<td>699</td>
<td>674</td>
<td>679</td>
<td>672</td>
<td>675</td>
</tr>
<tr>
<td>FRUITS</td>
<td>288</td>
<td>277</td>
<td>283</td>
<td>282</td>
<td>281</td>
</tr>
<tr>
<td>VEGETABLES</td>
<td>40</td>
<td>43</td>
<td>42</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>TEA</td>
<td>3.52</td>
<td>3.46</td>
<td>3.48</td>
<td>3.49</td>
<td>3.48</td>
</tr>
</tbody>
</table>
ii) Malaysian palm oil industry scenario

Origin of the Oil Palm Industry in Malaysia

At the present time, the oil palm exists in a wild, semi-wild and cultivated state in the three land areas of the equatorial tropics: in Africa, in South-east Asia and in South America.

Oil palm is indigenous to the tropical rainforest belt in West Africa and was brought into Malaysia (then Federated Malay States) at the turn of the 19th century with commercial scale plantings reported in 1911. The variety planted in Malaysia belongs to the genus *Elaeis guineensis* and currently the principal planting material is the hybrid Tenera variety.

The Oil palm Fruit

Oil palm has been subjected to considerable research and extensive breeding programs have been undertaken. The palm itself is long lived, but height usually imposes a limitation on harvesting ability. Typically, the planting material is from seed in a nursery and transplanted to the field at 9-15 months of age. Planting densities vary with soil type, locality and terrain, but 120-150 palms are common establishment rates.

As the oil palm, which is dioecious, grows, the bud in the axil of each leaf develops into a male or female inflorescence. After pollination, the female inflorescence develops into a fruit bunch with many fruitlets. The fruitlets are black when unripe and reddish orange when ripe. When fully ripe the fruitlets will detach from the bunch. Ripeness of the bunch is usually determined by a pre-determined number of detached fruitlets. The oil palm bunch is harvested manually using a knife attached to a pole which severs the stalk of the fruit bunch from the palm tree. The harvested bunches are termed fresh fruit bunch (FFB).

Oil palm is a perennial crop. It bears fruits within two and half to three years from planting and is economically viable for up to 25 years. Yield potential is 5 tonnes FFB per hectare in year 1 of harvest and by year 4 should be reaching 20t/ha/annum. In a mature plantation of 8 to 20 years of age, good management should produce up to 30t/ha/annum. Average bunch weights will usually increase from 4 kgs to over 25 kgs. Each hectare of oil palm can potentially yield up to 5 tonnes of oil per year, which is 5 to 10 times more than any other commercially grown crop.

The oil palm fruits are ovoid in shape varying in length from about 2 cm to more than 5 cm and in weight from 3 grams to 30 grams. Botanically, the fruit consists of a nut surrounded by fleshy fibrous mesocarp. The nut consists of the kernel within its shell (endocarp) *(Source: The Oil Palm – C.W.S Hartley 2nd Edn.)*

Palm oil milling

The FFB after harvesting is transported promptly to the palm oil mill for processing as delays in processing leads to free fatty acid (FFA) development. In the mill the FFB is steamed to sterilise the fruits, mashed and pressed to extract the crude palm oil (CPO). The CPO is then clarified, purified and vacuum dried and stored in tanks, ready for transport to
the refiners. The mesocarp fiber/nut mixture after oil extraction is separated and the nuts are cracked to separate the kernels. Figure I shows the typical flow chart of a palm oil milling process.

**Figure I: Typical palm oil milling Process Flow Chart**

The Crude palm Oil (CPO) is despatched to refiners for further refining before being made available to consumers. The palm kernels are delivered to Palm kernel crushers (PKC) who crush the kernels to produce palm kernel cake and palm kernel oil.

**Development of the Oil Palm Industry in Malaysia**

Malaysia is not only the largest producer and exporter of palm oil but also the world’s biggest exporter of oils and fats. Together with Indonesia, they produce nearly 80% of the world’s palm oil, used in cooking oil, fats and as chemical derivatives for detergent. Palm oil competes with soybean, canola oil, sunflower oil and animal fats in the edible oil market. Palm oil, as a commodity, continues to contribute significantly to the country’s economic development and foreign exchange earnings. The industry provides employment to more than 500,000 workers and in turn supports the livelihood of more than one million dependents.

For Malaysia, oil palm is the golden crop that has helped changed the scenario of Malaysian economy. Covering, currently a little over 4 million hectares of land, the oil palm cultivation in Malaysia has gone through several phases.

Important milestones of industry, namely the expansion era between 1960 and 1980 and the transformation era of the nineties, formed the foundation of today’s achievement. First was the diversification from rubber to oil palm during the early 1960s due to the drop in price of rubber after the Korean War combined with the commencement of the production of
synthetic rubber, which had been boosted during the Korean War. Recognizing the narrow base of the Malaysian economy and the over-dependence on rubber, the Government had then chosen oil palm as the alternative, rather than diversify into other economic activities, to generate growth in the agriculture sector which was the predominant activity then.

The large scale cultivation under the government land settlement schemes and the far sighted private sector has all been instrumental in transforming the sector. The rate of planting in West Malaysia accelerated during the 1960s. In 1960 the area planted covered 55,000 hectares, by 1965, it was over 100,000 hectares and by 1973 over 400,000 hectares.

A major part of this area was and is to be developed by FELDA in whose settlement schemes the oil palm is playing an increasingly important role. It was the Government’s decision to create the Federal Land Development Authority (FELDA) in order to win the hearts and minds of the less privileged members of the Malaysian community after the communist insurgency ended in 1960. Plantation companies have been responsible for most of the other plantings, both from forest and rubber land, but in recent years there has also been much planting by smallholders intending to send their bunches to nearby estate palm oil mills for processing. A high proportion of the available coastal alluvial soils have been taken up and much more planting has been taking place on inland soils, in some cases on quite steep land. In the East Malaysian state of Sabah, the oil palm has become an important crop within 10-15 years, and the planted area rose from 400 hectares in 1960 to 68,000 hectares in 1975, and the Sabah Land Development Authority has become responsible for about a third of the planted area. In recent times, Sarawak, the other East Malaysian state has seen an increase in the oil palm planted area with a high percentage being planted on peat soil areas. (Source: Proceedings of 1997 International Planters Conference)

Table V below shows the oil palm planted areas in West and East Malaysia 1975 and 2005, depicting the increase during the last thirty years. Table VI shows the distribution of oil palm planted area between private sector estates, government land settlement schemes, state schemes and the smallholders.

**Table V: Oil Palm Planted Area (Hectares)**

<table>
<thead>
<tr>
<th>Year</th>
<th>West Malaysia</th>
<th>Sabah (East Malaysia)</th>
<th>Sarawak (East Malaysia)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>568,561</td>
<td>59,139</td>
<td>14,091</td>
<td>641,791</td>
</tr>
<tr>
<td>2005</td>
<td>2,298,608</td>
<td>1,209,368</td>
<td>543,398</td>
<td>4,051,374</td>
</tr>
</tbody>
</table>

*Source: Department of Statistics Malaysia and MPOB*
Table VI: Distribution of Oil Palm planted area (Hectares) by category in 2004 & 2005

<table>
<thead>
<tr>
<th>Category</th>
<th>2004</th>
<th></th>
<th>2005</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hectares</td>
<td>%</td>
<td>Hectares</td>
<td>%</td>
</tr>
<tr>
<td>Private Estates</td>
<td>2,333,631</td>
<td>60.22</td>
<td>2,412,745</td>
<td>59.55</td>
</tr>
<tr>
<td>Govt. Schemes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FELDA</td>
<td>611,759</td>
<td>15.79</td>
<td>653,893</td>
<td>16.14</td>
</tr>
<tr>
<td>FELCRA</td>
<td>160,314</td>
<td>4.14</td>
<td>161,447</td>
<td>3.98</td>
</tr>
<tr>
<td>RISDA</td>
<td>80,778</td>
<td>2.08</td>
<td>80,424</td>
<td>1.99</td>
</tr>
<tr>
<td>State Schemes</td>
<td>322,359</td>
<td>8.32</td>
<td>318,292</td>
<td>7.86</td>
</tr>
<tr>
<td>Smallholders</td>
<td>366,486</td>
<td>9.46</td>
<td>424,573</td>
<td>10.48</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,875,327</td>
<td>100.0</td>
<td>4,051,374</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: MPOB

Government and Institutional Support

Much of the success of the Malaysian palm oil industry is credited to the private sector. However public policies in support of private investment in palm oil also played a major role and extended participation to poor rural communities. One of the most important of these policies was the replanting grant for smallholders. Replanting grants were initially used to encourage and finance replanting of old rubber trees with new high yielding varieties. Beginning in 1962, rubber smallholders were allowed to use these grants to switch to oil palm. This made it possible for large numbers of smallholders to absorb temporary income losses while shifting from rubber to palm oil production.

Such policies were complemented by strong institutional support from 3 main institutions: (a) the Palm Oil Registration and Licensing Authority (PORLA), which took care of the regulatory and licensing functions (b) the Palm Oil Research Institute of Malaysia (PORIM), which is involved in public sector research and development efforts and (c) the Malaysian Palm Oil Promotion Council (MPOPC), now called the Malaysian Palm Oil Council (MPOC), which undertakes public relations and market promotion of palm oil mainly in the export markets. The activities of PORLA, PORIM and MPOPC were funded by a tax on palm oil exports. PORLA and PORIM have since been merged to form the Malaysian Palm Oil Board (MPOB).

Palm oil production

In the year 2005, Malaysia produced about 14.9 million tonnes of palm oil, which is more than half of the world’s production, from a mere 4 million hectares of plantation area compared to the world’s total oilseeds area of about 216 million hectares. Table VII below show production data for 2004 and 2005

Table VII: Malaysian palm oil sector- Summary of Production Data (Tonnes)

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Palm Oil</td>
<td>13,976,182</td>
<td>14,961,658</td>
</tr>
<tr>
<td>Palm Kernel</td>
<td>3,661,456</td>
<td>3,964,034</td>
</tr>
<tr>
<td>Crude Palm Kernel Oil</td>
<td>1,644,445</td>
<td>1,842,631</td>
</tr>
</tbody>
</table>
Refining of crude palm oil

Crude palm oil produced by the palm oil mills, like most crude oils, contains impurities such as gums, pigments, trace metals and a host of other fat soluble compounds consisting primarily of free fatty acids and odoriferous matters. When required for edible purposes, it is important that all constituents which give an unpleasant taste, odour and colour are removed. Trace metals must also be removed, which if present after refining results in poor product storage. In most instances, the refining of crude palm oil in Malaysia is through a physical/steam refining process. However, some chemical/alkali refining of crude palm oil is also practiced.

In the physical refining process the crude palm oil goes through a de-gumming and deodorization process before it is subject to steam distillation under high temperature and vacuum for removal of free fatty acids. Refined, Bleached and De-odorized palm oil (RBDPO) is produced. The palm fatty acid distillate (PFAD) is a by-product from the refining process.

In order to cater for wide range of markets and the increased demand for liquid oils which are used in salads and cooking uses, the Malaysian refiners offer a low melting fraction, the more liquid palm olein and high melting point fraction, the harder stearin. These are accomplished through a simple process of fractionation which is based on 2 fundamental operations 1) Crystallization and 2) Filtration. The RBDPO is fractionated to get various grades of palm olein and palm stearin. Figure II shows the typical flow chart of the different refining processes.

Figure II: Typical palm oil refining processes
Refining of Crude Palm Oil (CPO)

The rapidly increasing palm oil refining and fractionation capacity consolidated Malaysia’s position not only as a leading producer, but also a major marketing factor in the international trade of oils and fats. This position has been achieved through, among other factors, the stringent of quality control and the capability of local refiners to meet high standards demanded by world markets. Currently, there are 47 refineries in operation. A majority of the operating refineries are in one way associated with the oil palm plantations and milling sectors, or both. Some of the refiners have also tied up with manufacturers of speciality products and oleo-chemicals. The palm oil refining industry is today among the most important manufacturing sectors in Malaysia.

The refining industry is big in Malaysia with a total refining capacity of about 18 million tonnes which is in excess of demand. Malaysia has 17 oleo-chemical plants with production capacity of about 1.8 million tonnes. Table VIII refers.

Table VIII: Summary: Status of oil palm processing capacity in Malaysia (2001 & 2005)

<table>
<thead>
<tr>
<th>Sector/Category</th>
<th>No.</th>
<th>Capacity (million tonnes/year)</th>
<th>No.</th>
<th>Capacity (million tonnes/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palm oil mills</td>
<td>352</td>
<td>67.6 (FFB)</td>
<td>387</td>
<td>80.5 (FFB)</td>
</tr>
<tr>
<td>Refineries</td>
<td>47</td>
<td>15.5 (CPO)</td>
<td>52</td>
<td>18.1 (CPO)</td>
</tr>
<tr>
<td>Kernel crushers</td>
<td>38</td>
<td>4.3 (PK)</td>
<td>40</td>
<td>5.0 (PK)</td>
</tr>
<tr>
<td>Oleo-chemical</td>
<td>17</td>
<td>1.96 (oils)</td>
<td>17</td>
<td>1.82 (oils)</td>
</tr>
</tbody>
</table>

* estimated
Source: MPOB

iii) Malaysian palm oil trade
The palm oil industry has evolved from a mere exporter and producer of crude palm oil into a more diversified sector with downstream and supporting industries by venturing into the oils and fats business. Only about 10% of the crude palm oil is exported overseas. The bulk of the crude palm oil produced is refined locally and exported, although there is important downstream development into oleo-chemicals and other products.

Palm oil commodity contributes significantly to the country’s economic development and foreign exchange earnings. Value added of the Malaysian agricultural sector achieved 5.0% (MYR 21,137 million in 2004) and is estimated to grow by 4.8% (MYR 22,142 million) in 2005 and forecasted to reach 5.0% (MYR 23,245 million) in 2006. Oil palm industry’s share to the agriculture sector is forecasted to increase from 34.9% in 2004 to 37.1% in 2006. Table IX shows the details.

1 USD = MYR 3.7

Table IX: Value added in the Agriculture Sector 2004 – 2006: % Share to agriculture

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005 *</th>
<th>2006 **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Oil Palm</td>
<td>34.9</td>
<td>36.5</td>
<td>37.1</td>
</tr>
<tr>
<td>Forestry and logging</td>
<td>14.0</td>
<td>13.7</td>
<td>13.4</td>
</tr>
<tr>
<td>Fishing</td>
<td>12.4</td>
<td>11.8</td>
<td>11.8</td>
</tr>
<tr>
<td>Rubber</td>
<td>11.1</td>
<td>10.4</td>
<td>10.1</td>
</tr>
<tr>
<td>Other agriculture^</td>
<td>27.6</td>
<td>27.6</td>
<td>27.6</td>
</tr>
</tbody>
</table>

*Estimated   ** Forecasted  
^ Including livestock, cocoa, paddy, and miscellaneous agriculture
Source: Department of Statistics Malaysia

Export earnings of palm oil and palm based products in 2004 and 2005 amounted to Ringgit Malaysia MYR 30.4 (USD 8.2)* and 28.6 billion (USD 7.7)* respectively. In 2004, Malaysia exported around 12.6 million tonnes of palm oil to the world, accounting for 58% of global palm oil export and 27% of the global oils and fats trade. Table X shows the export volume and value of oil palm products.

1 USD = MYR 3.7

Table X: Export Volume and Value of Oil Palm Products

<table>
<thead>
<tr>
<th>Product</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume</td>
<td>Value</td>
</tr>
<tr>
<td></td>
<td>(tonnes)</td>
<td>(RM Million)</td>
</tr>
</tbody>
</table>

15
The major export markets for Malaysian palm oil are China, the EU-25 countries, India and Pakistan. Of the EU-25 countries Netherlands, Germany and United Kingdom are the major importers. Rotterdam is the gateway for the palm oil business in Europe. Table XI provides the palm oil trade statistics for Malaysian exports to the major markets in 2005.

Table XI: Palm Oil Exports to Major Countries (tonnes)

<table>
<thead>
<tr>
<th>Country</th>
<th>January – December 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>2,961,489</td>
</tr>
<tr>
<td>EU-25</td>
<td>2,270,341</td>
</tr>
<tr>
<td>Pakistan</td>
<td>957,012</td>
</tr>
<tr>
<td>India</td>
<td>634,995</td>
</tr>
<tr>
<td>Egypt</td>
<td>608,816</td>
</tr>
<tr>
<td>USA</td>
<td>559,941</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7,992,594</td>
</tr>
</tbody>
</table>

Source: MPOB

Uses of palm oil

Palm oil’s balanced composition of unsaturated (40% oleic acid) and saturated fatty acids (44% palmitic acid and 5% stearic acid) coupled with its high Vitamin E content makes it a naturally stable oil. The fatty acid composition also gives palm oil its semi-solid consistency which provides flexibility in the manufacture of a wide variety of food products.

When used to make solid-fat products, palm oil need not go through the expensive hydrogenation process. This avoids the formation of unnatural trans-fatty acids, which are formed during hydrogenation, and proven detrimental to health.
a) **Food uses**

Palm oil’s unique composition makes its nutritionally rich and versatile in its uses. Being semi-solid, it has physical properties which are needed in many food applications. Refined, bleached and de-odorised palm oil (RBDPO) is a major ingredient in margarine, shortening and ice cream.

RBDPO is further fractionated to produce refined, bleached, de-odorised palm olein (RBD palm olein) and RBD stearin, a by-product of the fractionation. RBD olein is used in the manufacture of cooking oil, in industrial frying or processed foods like potato chips, French fries, instant noodles and other snack foods. RBD stearin is used in the manufacture of soaps, detergents and in the manufacture of margarine and shortenings for food.

b) **Non-food uses**

Palm oil’s techno-economic superiority makes it a much favoured starting material for manufacture of non-edible products. These include soaps, detergents and other surfactants. It is also an excellent raw material for production of oleo-chemicals, including fatty acids, fatty alcohols, glycerol and other derivatives which are widely used in the manufacture of cosmetics, pharmaceuticals and industrial products.

c) **Bio-diesel**

Rising crude oil prices have sparked keen rising interest in alternative fuels such as bio-diesel. Palm bio-diesel is becoming an increasing commercial reality. Demand for biodegradable fuels including palm diesel by developed countries such as US, Japan, the EU and Korea is expected to reach 10.5 million tonnes by 2007. Currently, major producers of bio-diesel in the EU use rapeseed, soybean, sunflower and other edible oils to produce the methyl esters for fuel. Malaysia with 3.6 million hectares of oil palm plantation and more than 360 mills, has the capacity and capability, and is well positioned to meet the increasing demand for bio-degradable fuels. The National Bio-fuel Policy announced in August 2005 is aimed at encouraging the use of bio-fuel as an alternative petroleum-based diesel or fossil fuel, promoting downstream activities thus expanding the usage of palm oil. (*Source: Economic Report 2005/2006 Ministry of Finance Malaysia*)

**B) Identify major market access / entry barriers in export markets for palm oil from Malaysia based on Environmental and Health considerations.**

Trade interests can be significantly affected by the establishment of Environmental and Health Requirements. These requirements are mushrooming in developed countries, increasing in both stringency and complexity. Meeting these requirements in export markets has both a market-access and a sustainable development dimension.

Although palm oil now dominates the international edible oil trade, the commodity is not without its share of threat and challenges from competing oils. Presently, the industry is confronting new challenges of differing nature and dimensions in terms of regulatory requirements, trade obligations, technological advancement and new industrial and consumer demands. These demands are manifested in different forms such as product quality,
nutritional aspects, food safety, environmental concerns, worker welfare and sustainable production.

**Traceability and Food safety issues**

The demand for some kind of guarantee on the safety of food has lately witnessed increasing trend among consumers worldwide. This has come about not only as a result of frequent incidence of high-profile food related illnesses arising from contamination but also because of the growing sophistication in the hierarchy of needs among consumers in the developed countries. Concerns on bioterrorism and use of biological and chemical weapons have further exacerbated the situation.

Food safety and Traceability requirements are increasingly being demanded in the food trade, especially by markets in the developed nations. This is evidenced by the EU Food safety laws and the US FDA directives which are in force and also standards and certification and labelling systems developed by the large retailers. The global food market has embraced the Codex Alimentarius Food Safety Standards and compliance to Hazard Analysis and Critical Control Points (HACCP) as a means to provide consistent and universal food safety measures for international trade.

Global palm oil consumption is forecast to reach a record 37.3 million metric tonnes in 2006/2007. The larger food consumption forecast is driven primarily by increased palm oil demand in China and India, the world’s largest edible oil importers. Malaysia accounts for more than 50% of world palm oil output and more than 60% of world palm oil exports. Palm oil plays a dominant role within the EU refining industry. The EU has seen a rise in demand for palm oil possibly linked to the demand for bio-diesel, anti-GM issue as well as the concerns of the presence of trans-fatty acids in edible oil products. Food manufacturer’s demand for vegetable oils such as palm oil is growing as the increasingly health conscious consumer turns away from animal fats and opts for vegetable alternatives. Palm oil’s versatility and superior nutritive qualities have made it a preferred ingredient in a broad variety of foods.

Like most other food trade, the palm oil business has had its fair share of food safety related scares. Notable among them, include, the incidence of diesel contamination of palm oil consignments going to EU from Indonesia which received great publicity, microbial contamination of palm oil parcels arriving in China and the Sudan IV dye contamination found in palm oil on the supermarket shelves in UK.

*Figure III: Flow Chart of palm oil supply chain*
The Dutch Board for Major Fats and Oils (MVO) initiated a study in 2002 on hazards assessment of the entire palm oil supply chain (as shown in Figure III) for edible products. The aim of the study was to survey potential risks to food safety in the palm oil food supply chain. The study was prompted by a major scandal involving contamination of palm oil with mineral oil in 1999.

Based on the findings of the expert group, some of the main concerns relating to food safety in the palm oil supply chain include:

- Heavy metal contamination from use of fertilizers
- Chemicals (pesticides, fungicides, herbicides) used in plantations and residues
- Mineral oil contamination
- Microbiological contamination
- Aromatic hydrocarbons (dioxins)
- Contamination by previous cargo during transportation on land and sea

The study concluded that there was no risk of the presence of chemical contamination or pesticide residues in the palm oil arising from agricultural and milling practices. However, there was serious concern with regard to the incidence of contamination of the oil by residues of previous cargo. This required the need for dedicated tanks and tankers for the bulk transport of palm oil.

The palm oil mill forms an integral part of the palm oil supply chain. It provides the raw material for food. About 85% of the produce from the mill i.e. Crude Palm Oil (CPO) and Palm Kernel (PK) ends up in food either directly or indirectly after refining and/or further processing and formulation. The downstream stakeholders in the palm oil supply chain e.g. the refineries and kernel crushers are coming under increasing pressure to implement food safety systems from their immediate customers and retailers. Many have responded positively by adopting and implementing Hazards Analysis & Critical Control Points (HACCP) and show certificated evidence of compliance in their establishments. As part of their supplier assurance program, the refineries and kernel crushers are demanding that food safety is addressed in the palm oil mills and to show evidence of compliance.
Environmental Issues and Sustainability

The relevance of environmental and social aspects in the palm oil trade is rising. In recent years, the industry has come under close scrutiny over health, social and environmental issues. Globally, the oil palm industry has been increasingly pressured by stakeholders, namely the environmental NGOs, claiming that palm oil is bad for health and that cultivation of the crop contributes to tropical rainforest destruction, pollution, alienation of indigenous people from their land and social conflicts. Industry players have often characterised these controversies as anti-palm oil smear campaigns but it is clear that they cannot afford to ignore the fact that others are watching closely the practices of the industry.

In the light of pressing issues and new trends in the global vegetable oil trade, there is an urgent need for the palm oil industry to review and reappraise its practices and business strategies. The rapid expansion of oil palm cultivated areas, particularly in Indonesia cannot go on for long without taking into account the long-term needs of the society and the environment. The key word here is sustainability i.e. sustainable palm oil production. Supply chain pressures are becoming more intense. The producers are selling to a market that is progressively more sensitive to charges that oil palm cultivation harms the environment, biodiversity and the lives of people. Retailers and food producers want to assure consumers that they are not buying products that have contributed in some way to the ills of the planet.

Nutrition and Health Issues

There are many reports and papers with inaccuracies, misleading deductions and misrepresentation of the facts pertaining to the consumption of palm oil as food and its effect on health. The discovery of a linkage between dietary fats and oils to cardiovascular diseases brought greater scrutiny on the effects of edible oils on health. The generalised finding that saturated fats were more damaging put commonly used tropical oils such as coconut oil and palm oil in the back seat. Palm oil received much negative publicity as a result of it being rich in saturated palmitic acid (45%) which fact was used by competing oils to deprecate its use.

More than 142 nutritional studies evaluating palm oil and its components were conducted by American, European and Australian institutes of high repute. Based on scientific observation, it was reported that when palm oil is incorporated into a daily human diet where the fats are consumed at WHO recommended levels, palm oil does not increase Total Blood Cholesterol or bad LDL-cholesterol levels. Hence a diet rich in palm oil does not constitute a risk of coronary heart disease and not deleterious to human health. The campaign against palm oil conveniently ignores these facts and focuses on highlighting the effects of palmitic acid as an isolated fatty acid that increases blood cholesterol levels. (Source: Article by MPOC: ‘How palm oil harms health, rainforest and wildlife’)

In the latest authoritative review published in the The American Journal of Clinical Nutrition (2004) that palm oil is rich in both saturated palmitic acid (45%) and monounsaturated oleic acid (40%) and as such is regarded as palmitic oleic rich oil and not solely palmitic acid as claimed.

Studies also revealed that palm oil was as good as or even better than other vegetable oils from a nutritional stand point of view due to its inherently high levels of carotenoids (precursor for Vitamin A) and tocopherols (Vitamin E) and tocotrienols. Additionally, it was
noted that the hydrogenation process needed by other oils for solid and semi-solid products produced trans-fatty acids which has a significant effect in elevating blood cholesterol levels.

The various findings of research on the side of palm oil, in actual fact, helped to assure consumers of its safety and assisted in gaining market access to many countries in Asia and Europe, where traditional cooking oils were preferred. Unfortunately the earlier campaign against palm oil has resulted in a nutritionally negative perception in some consumer circles.

B) Identify domestic environmental impacts of palm oil production in Malaysia

Oil palm cultivation and processing, like other agricultural and industrial activities, raises environmental issues. What are some of these issues?

Over the past few years, the oil palm industry has been increasingly pressured from stakeholders, namely the Environmental NGOs over allegations that the industry is driving deforestation in important tropical ecosystems and the loss of bio-diversity. The industry has also been blamed for destruction of the habitats of wild animals namely the Orang Utans, progressively leading to their extinction.

One environmental concern is the incidence of soil erosion. The soil is highly susceptible to erosion during the land preparation stage preceding planting. This is when the land is exposed to the erosive elements of wind and rain. If not suitably controlled, erosion can lead to devastating consequences for the environment.

A serious outcome of erosion is of course the loss of valuable nutrient-rich top soils. In a natural environment, the top soils are rich in the necessary elements, which can fertilize the plants. When such elements are lost through erosion, external supplies of nutrients are necessary to ensure a healthy plant growth. The indiscriminate application of chemical or inorganic fertilisers can also have negative environmental consequences.

Apart from the loss of top soil, erosion also promotes deposition of such soils in the nearby rivers and streams, which results in siltation. Rivers which are silted are more to flooding because of the reduction in distributive capacities, while in addition, shallow rivers do create problems for aquatic organisms which thrive in deeper streams.

Oil palm cultivation requires the use of chemical fertilizers to achieve meaningful yields. Their cultivation, therefore promotes increasing proneness to the ecologically damaging incidence of fertilizer run-off. The excessive use of pesticides is another agricultural practice that draws criticism from environmental groups. Indiscriminate use of such chemicals often results in run-off into surface waters resulting in eutrophication and loss of aquatic life.

The industry, especially palm oil mills generate large quantities of effluent with high Biochemical Oxygen Demand (BOD), which when discharged untreated into watercourses affects aquatic life and domestic water supply. The palm oil mills also generate waste biomass in the form of empty fruit bunch, fibre and shells which can lead to environmental problems if not disposed or utilized properly.
CHAPTER 3

National Experience in Improving Export Competitiveness and Environmental Sustainability in the palm oil industry in Malaysia

Review various government policies and private sector strategies in Malaysia with regard to:
   a) Improving market access of palm oil industry on Environmental and Health grounds (i.e. improving standards and testing to conform to Environmental and Health standards in export markets)
   b) Improving environmental sustainability of production of palm oil (including import regulations)

The growing concern about environmental issues and health requirements has resulted in the introduction of increasingly stringent standards in international trade. To some extent, these constitute non-tariff barriers from importing countries, especially the EU. Palm oil is a strategic industry for Malaysia and the manner it has responded to the environmental challenges has been very positive. Improving market access of the palm oil industry by
accepting environmental, social and health requirements are viewed as opportunities to bring the industry to a higher achievement.

Malaysia has limited land for expansion of the oil palm industry as it is committed, by policy, to retain at least 43.6% of its landmass as natural forests (Paper presented at meeting of NIOP by Minister of Plantation Industries & Commodities, March 2005). Therefore, further increase in production of palm oil has to be through higher yields by utilizing high-yielding clones and employing improved techniques and practices. The key issue is how to optimize oil palm cultivation and palm oil production in a way to achieve sustainable conditions that take into consideration the environment, local population and wildlife.

A number of initiatives have been developed by plantation companies, manufacturers and retailers which aim to define and provide a framework for ‘sustainability’ in agriculture. All these initiatives share some common features, in particular, they use environmental, social and economic indicators to try and define sustainable or good management practices at the field level. However, formal certification and standard setting processes have not yet focussed specifically on oil palm. The following certification schemes which are not specific to oil palm but contain relevant approaches and ideas include:

- International Federation of Organic Agriculture Movements (IFOAM)
- Social Accountability International (SAI)
- Sustainable Agriculture Network (SAN)
- Forest Stewardship Council (FSC)
- Euro-retailer Produce Working Group Good Agricultural Practice (EUREPGAP)

(Source: Discussion Paper on RSPO July 2003)

The Malaysian palm oil industry is undergoing a paradigm shift where environmental and social aspects are seen as opportunities to bring the industry to a higher level of achievement. There is now more readiness on the part of the industry in adopting strategies to make sustainable development an important obligation.

Nearly 60% of the plantation business in the Malaysian palm oil sector is managed by the private sector companies. Only about 10% is owned by smallholders while the rest are managed by government support and state-owned schemes.

**Institutional and Government Support**

Malaysia has long recognised the need for institutional and government support for its substantial interests in the palm oil industry. Three organisations namely The Malaysian Palm Oil Association (MPOA), The Malaysian Palm Oil Board (MPOB) and The Malaysian Palm Oil Council (MPOC) provide the necessary support for the improvement and development of the industry.

MPOA serves to provide representation for the plantation industry at both the domestic and
international forums. The members of the Association consist of producers and corporate bodies involved in plantation tree crops. It has been tasked with the important function of balancing the needs and interests of the various sectors for synergy and development of the plantation industry as a whole. MPOA’s mission is to ensure the long term profitability and growth of the Malaysian palm oil industry and other plantation crops including oil palm, rubber, coconut, sugar cane, tea, banana and pineapple.

MPOB was established in May 2000, with the principal objective of promoting, developing and advancing the Malaysian palm oil industry. As the steward of the nation’s palm oil industry, MPOB is responsible for providing the scientific and technological support. MPOB’s commitment to the industry is not limited to R&D, but also encompasses registration, licensing and enforcement activities. MPOB derives its funding from the collection of cess from the industry for every tonne of palm oil and palm kernel oil produced. In addition, MPOB receives a budget allocation from the government for development and approved research projects under the Intensification of Research in Priority Areas (IRPA) programme. MPOB also maintains linkages with international institutions related to oils and fats as well as R&D institutes that help MPOB keep abreast with the latest developments in the sector.

MPOC was incorporated in January 1990 and is charged with spearheading the promotional and marketing activities of Malaysian palm oil in the effort to make it the leading oil in the global oil and fats market. MPOC also provides effective voice and representation at international forums to counter the lobbying on the negative health effects of palm oil as dietary fats.

Malaysia continues to play an active role in Codex Alimentarius Commission and other international food safety activities. The Codex contact point at Ministry of Health Malaysia, serves as the Secretariat of the National Codex Committee as well as the Contact Point for other international food safety activities in parallel with Codex.

Legislation in Malaysia

Environmental legislation in Malaysia has developed in pace with the nation’s economic development. As such the palm oil sector in Malaysia is a highly regulated industry. Currently the industry is adhered to more than 15 laws and regulations including the land Acquisition Act 1960, Environmental Quality Act 1974, Environmental Quality (Clean Air Regulations) 1978, Pesticides Act 1974 (Pesticide Registration Rules), Occupational and Health Act (1977) and Protection of Wildlife Act 1972. The industry is also complying with Hazard Analysis & Critical Control Points (HACCP) and the Environmental Impact Assessment (EIA) requirements.

Roundtable on Sustainable Development

An initiative which has the full support of the Malaysian palm oil industry is the Roundtable on Sustainable Palm Oil (RSPO), which was set up to meet the challenges from the NGOs and corresponding demands from consumers. The RSPO is a new global multi-stakeholder initiative on sustainable palm oil that was formally established under Article 60 of the Swiss Civil Code in April 2004. The not-for profit association was created by organisations carrying
out their activities in and around the entire supply chain for palm oil, with the principal objective, to promote the growth and use of sustainable palm oil through co-operation within the supply chain and open dialogue with its stakeholders. The Association has and will have members representing major players along the palm oil supply chain, namely the oil palm growers, palm oil processors and traders, consumer goods manufacturers, retailers, banks and investors, environmental / nature conservation NGOs and social / development NGOs and from many countries that produce or use palm oil. (Source: RSPO Draft criteria Version 2 May 2005)

The RSPO is still in the draft stage and is in the process of being finalised for submission to the Executive Board. The principles and criteria have been adopted and a period of field testing is under way. It is envisaged that the RSPO will ultimately become a standard which will be audited and certified by appointed certification bodies.

In the RSPO the principles and criteria for sustainable palm oil production is based on economic, environmental and social viability which is delivered based on following principles:

Principle 1: Commitment to transparency
Principle 2: Compliance with applicable laws and regulations
Principle 3: Management planning that aims to achieve long-term economic and financial viability
Principle 4: Use of appropriate best practices by growers and mills
Principle 5: Environmental responsibility and conservation of natural resources and biodiversity
Principle 6: Responsible consideration of employees and of individuals and communities affected by growers and mills
Principle 7: Responsible development of new plantings
Principle 8: Commitment to continual improvement in key areas of activity.

The action plan for continual improvement would be based on consideration of the main social and environmental impacts and opportunities of the grower/mill and would include potential indicators for measurement on
- Soil fertility
- Reduction in chemical use
- Energy use
- Pollution and emissions

**Best Management Practices on the plantations**

The Malaysian palm oil industry has already for some years now through a self initiated and regulated system adopted and institutionalized good agricultural and best management practices on the estates. They include widespread use of:

- Integrated Pest Management (IPM) to minimise the use of toxic pesticides through the promotion of beneficial plants, natural enemies and bio-controls like barn owls
- Recycling and reuse of waste materials from palm oil mills as fertiliser material, thus minimising the demand for inorganic fertilisers, while maintaining the fertility of soils
- Zero burning for land clearing and replanting, which has become mandatory in Malaysia
- Planting of leguminous crops as cover to mitigate and minimise soil erosion
- Terraced plantings and the construction of silt pits as a soil and conservation measure.

**Malaysian Standard on Good Agricultural Practice**

Work on a Malaysian Standard on GAP started in early 2004. The Food and Agricultural Industry Standards Committee (ISC A) in SIRIM Berhad, under whose authority this Malaysian Standard was developed using the multi-stakeholder approach. A Working Group on Crop Commodities was formed, comprising a team of experts and representatives from various government agencies, grower associations, exporter associations, major agricultural producers, consumer associations and smallholder organizations. The Chairman of FAMA was nominated as the Chairperson of the Working Group.

The draft standard was approved in January 2005 by the Department of Standards Malaysia (DSM) after considering public comments.

The Standard MS 1784:2005 Good Agricultural Practice Crop Commodities is generic in nature, being applicable for all crop commodities and includes both food and non-food crops. The standard is intended for use in certification schemes to recognize and certify farms which adopt GAP in Malaysia. Hence the development of MS GAP 1784:2005 involved much referencing to the EUREPGAP Protocols on Fruits and Vegetables and also noted the requirements established under the Department of Agriculture Malaysia’s SALM scheme.

Based on the framework of the generic MS 1784:2005, GAP specific standards for 7 major crop commodities are being drafted by Technical Sub-Committees comprising experts. These crop commodities include oil palm, rubber, cocoa, pepper, herbs, fruits and vegetables and flowers and ornamentals. The draft standard for oil palm has been prepared and is being circulated for public comments.

The MS-GAP contains 16 elements as shown in Table XII below.

<table>
<thead>
<tr>
<th>1. Traceability</th>
<th>9. Harvesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Record Keeping and Internal Audit</td>
<td>10. Post-harvest Handling</td>
</tr>
<tr>
<td>3. Planting material and rootstock</td>
<td>11. Pesticide residue analysis of produce</td>
</tr>
<tr>
<td>4. Site History and Site Management</td>
<td>12. Waste and Pollution Management</td>
</tr>
<tr>
<td>5. Soil and Substrate Management</td>
<td>13. Worker Health, Safety and Welfare</td>
</tr>
<tr>
<td>7. Irrigation and Fertigation</td>
<td>15. Record of Complaints</td>
</tr>
<tr>
<td>8. Crop Protection</td>
<td>16. Legal Requirements</td>
</tr>
</tbody>
</table>

The MS-GAP was officially launched on December 19th, 2005. It will be administered and managed by SIRIM-QAS, the National Certification Body in Malaysia, which is accredited by the Department of Standards Malaysia (DSM).
Euro Retailer Produce Working Group Good Agricultural Practice (EUREPGAP)

Three palm oil plantations in Malaysia covering an area of 8,500 hectares are certified to EUREPGAP. The plantations belong to Kumpulan Guthrie Berhad, a government linked private conglomerate that owns nearly 100,000 hectares of planted oil palm land.

EUREPGAP is a retailer led initiative which has evolved into an equal partnership of retailers, producers and traders involved in the food trade. It is a global standard whose integrity is based on audits and certification conducted by approved certification bodies.

EUREPGAP aims to provide reassurances to consumers about the safety of the foods which they purchase, as well as environmental and social standards under which it was produced. Considerable attention is given to the management of fertilisers and pesticides. Traceability is an important element in the protocol and systems must be in place to address this aspect.

Environmental Management Systems Standard (ISO 14001)

A number of palm oil mills and palm oil refineries in Malaysia have achieved certification to this ISO standard. The standard requires organizations to assess their environmental impacts and develop an environmental policy to address them. The two specific requirements of relevance are:

- the policy includes a commitment to comply with relevant environmental legislation and regulations
- the policy includes a commitment to prevention of pollution

ISO 14001 is an auditable standard that provides a framework for organizations to implement their environmental policies and can be verified by third party certification.

Hazards Analysis Critical Control Point (HACCP)

A number of palm oil refineries and palm kernel crushers have or are in the process of implementing HACCP in their processing establishments. The palm oil mills due to pressure from the downstream stakeholders are also considering implementation of HACCP. Thus far, 1 palm oil mill has been certified, while a few others are in the process.

Hazards Analysis and Critical Control Points or HACCP has become an internationally recognized tool for managing the food safety aspects of production, processing, distribution and preparation of food. It is a preventive program which identifies, assesses and controls hazards which are significant to food safety. The HACCP-approach to quality assurance moves away from testing of the final product and instead emphasizes the importance of controlling hazards associated with the food system.

Palm oil industries proactive response to the adoption of HACCP in the palm oil mills will be a step in the right direction. There is need to position the palm oil business to the coming impact of retailer’s dominance. This requires transforming from a commodity mentality to satisfying the whole process value chain and respond to our consumers and stakeholders. The
implementation of HACCP based food safety management system in the palm oil mill should not be considered as an imposition but an opportunity to differentiate.

CHAPTER 4

Recommendations based on experience of Malaysia in the palm oil sector

a) Government policy to improve export competitiveness, especially of SMEs in food and food processing industry, in general, on basis of conformity with international environmental and health standards

- At policy level the relevant Ministries particularly the Ministry of Plantation Industries and Commodities, as the custodian of the palm oil industry in Malaysia and its agencies must be responsible for keeping themselves informed of current and proposed requirements and be aware of trends to be able to initiate policy adjustments to the strategy for the palm oil industry which will result in a proactive policy for the development and success of the industry.

- Malaysia should continue its active involvement in the Codex Committee on Fats & Oils, which is part of the wider Codex Alimentarius, to discuss on issues pertaining to food safety and quality in the fats and oils. R&D strategies carried out by MPOB should continue to provide information on research findings to international bodies like Codex to demonstrate that palm oil is healthy and safe.
• Legislative requirements mainly relating to environmental and health requirements on the end products, particularly in EU and USA, tend to cover the risks and hazards throughout the life-cycle of the product i.e. from cultivation, production, processing, transportation, packaging and marketing. The government through institutional support from MPOB and palm oil industry representatives will need to conduct life cycle analysis throughout the entire supply chain and enact appropriate legislation to protect these issues.

• It is important that the authorities educate the stakeholders in the palm oil industry, including consumers, of the implications and need to address environmental and health issues and the impact on the long term sustainability and viability of the industry. An “informed” group of stakeholders are more likely to make commitment to comply with the benefit of both the local and global community.

• The authorities should encourage the industry, through incentives and if necessary legislative acts to provide certificated evidence on initiatives to address environment and health requirements are being implemented.

• Certification to a globally accepted standard like EUREP GAP is one answer. An alternative move will be for the Government to initiate the implementation of MS-GAP in the oil palm plantations. The government should initiate steps to achieve equivalency of the Malaysian standard to international standards to gain recognition and acceptance. Financial aid should be provided to SMEs to underwrite the costs involved in certification. The authorities should address the lack of sufficient internationally recognised laboratories, sophisticated test equipment and lack of well-trained staff to carry out testing of MRLs for pesticide and chemical residues in palm oil and its products.

• Research studies to-date on the effect of palm oil products on nutrition and health should be widely disseminated to the public at large. These should be in a “readable” form to be better appreciated by non-scientific consumers and would do much to dispel some of the prejudices created earlier by unsubstantiated claims by competing edible oils. Work should continue, preferably in collaboration with international research organisations, on nutritional studies on palm oil products as this will continue to be a crucial issue in the acceptance of these products by consumers.

(b) Government policy to improve environmental sustainability of food and processed food production

• The government should actively promote Integrated Pest Management (IPM) in palm oil production throughout the country. A better understanding and awareness of IPM techniques through planned capacity building programmes and training, particularly in the smallholder schemes should be undertaken. Attention must be given to “approved” pesticides in the EU and other developed economies. Where pesticides peculiar to oil palm are used research must be conducted to ascertain residue levels and its effect on health and safety.
• As substantial fertilisers are required for oil palm it is essential that methods and techniques are developed to effectively use these chemicals and reduce dosages to that required by the plant.

• Waste disposal plan for empty pesticide containers must be put in place, to minimise reuse of the containers for storage of water and other edible products. Presently, in Malaysia there is only one company (Kualiti Alam Sdn. Bhd.) that has been contracted to handle disposal of hazardous waste including empty pesticide containers. The fees charged for collection and disposal are high and plantation companies, more so, the smallholders are reluctant to pay the high fees and resort to illegal disposal methods. The government has to provide alternative companies for waste disposal and scale down the high charges to make it more affordable.

• There must be more communication to the global public on the socioeconomic benefit of oil palm cultivation in Malaysia viz a viz the deforestation and wildlife elimination that is usually being reported. Malaysia policy of keeping a balanced development and preservation of forested land should deserve merit.

• Under the Kyoto protocol, which comes into effect in 2008, the palm oil industry should be able to claim carbon credits from the reduction in greenhouse gas (GHG) emission. The oil palm is generally known as a net sequester of carbon dioxide over its 25-year growth cycle. In addition, the use of palm oil derived methyl esters as bio-fuel will help reduce diesel use. The oil palm industry with its abundance of biomass offers a tremendous opportunity for the country to help reduce GHG and contribute to slowing down climate change. (Basiron and Chan (2004) Journal of Oil Palm Research Vol. 16, No.1).

• The recycling of waste materials in the oil palm industry should be further encouraged and appropriate technologies should be introduced to make recycling viable. These include the use of waste materials as substitutes for fertiliser, energy from biomass, recovery of organic matter from effluent, production of biogas etc.

b) Initiatives by private sector organizations and SMEs in these two areas

• Raising awareness and recognition among stakeholders in the palm oil supply chain in Malaysia of the requirements on food safety, environmental and health requirements in the domestic and particularly the export markets and of the problems created by the traditional approaches in planting, growing, processing and further downstream processing. This is with a view to commitment to standards in the business.

• There are many smallholder plantations which do not have processing facilities for their FFB and supply to private mills. Institutions such as MPOA and MPOB should collaborate with private miller organisations, such as Palm Oil Millers Association (POMA), and assist in promoting implementation of Good Agricultural Practices (GAP) in smallholder farms.

• The RSPO initiative is a move in the right direction for addressing sustainable issues in the cultivation of oil palm. However, for recognition and acceptability, the RSPO criteria must transgress to become an auditable and certifiable standard. To this end,
the RSPO criteria needs to progress to a certifiable standard which will enable accredited Certification Bodies to certify plantations which are in compliance.

c) Regional cooperation mechanisms and modalities in these two areas

- Many of the “new” requirements on environment and health are additional i.e. over and above that legislated by country requirements and are being demanded by private sector organisations, such as large retailers and importers, with the active encouragement of NGOs such as WWF and Friends of the Earth(FOE). The justification and legitimacy of these requirements are not strongly addressed by WTO rules and as such developing countries fall victim to complying with these requirements. The palm oil producing countries should collaborate to engage in discussions with these market players e.g. participation at RSPO and EUREPGAP meetings, and perhaps at UN funded discussion forums, which should pave the way for better understanding of the requirements and meaningful demands.

- Regional collaboration among palm oil producer countries and organisations within the ASEAN region, particularly Indonesia, Thailand, Myanmar, Vietnam and Cambodia must be enhanced to discuss the implications of environmental and health requirements on oil palm cultivation and identifying problems in compliance. UNESCAP could facilitate the meeting among these countries by organizing regional workshops. The workshops could be a platform to discuss national experiences on these issues and to discuss adjustment approaches to meet these requirements. The Workshops could also be used in capacity building for providing information on new developments on environmental and health requirements, with regards to government legislations, private labels or voluntary standards in the developed countries in relation to importation of palm oil and palm products.

Acronyms

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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>FFB</td>
<td>Fresh Fruit Bunch</td>
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<tr>
<td>CPO</td>
<td>Crude Palm Oil</td>
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<tr>
<td>PK</td>
<td>Palm Kernels</td>
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<tr>
<td>MPOB</td>
<td>Malaysian Palm Oil Board</td>
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<td>MPOC</td>
<td>Malaysian Palm Oil Council</td>
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<tr>
<td>FELDA</td>
<td>Federal Land Development Authority</td>
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<tr>
<td>RBDPO</td>
<td>Refined, Bleached and De-odorised palm oil</td>
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